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10/607,728	06/27/2003	Neal C. Oliver	42P16530	6497

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EXAMINER	
DUONG, DUC T	

ART UNIT	PAPER NUMBER
2419	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/607,728	OLIVER ET AL.	
	Examiner	Art Unit	
	Duc T. Duong	2419	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 August 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-16,18-23 and 25-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-16,18-23 and 25-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 4-6, 9-13, 15, 16, 18, 19, 21-23, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al (US Patent 6, 975,638 B1) in view of Lodha (US Patent 7,330,430 B2) and Conner et al (US Patent 7,039,061 B2).

Regarding to claims 1, 11, 16, and 23, Chen discloses an apparatus (fig. 7) comprising a classification unit C1-2 to examine packets received from a network (col. 7 lines 22-26), determine a path (egress port/destination port) to be taken by each packet through a switch fabric 70 (col. 7 lines 26-29), and classify each packet into one of a plurality of flow bundles based on the packet's destination and path through the switch fabric (col. 7 lines 29-45), and label each packet with a flow identifier to identify the associated flow bundle (col. 7 lines 41-43); a mapping unit (CAM) coupled to the classification unit to place each packet into one of a plurality of queues 132 based on the flow bundle to which the packet has been classified (col. 7 lines 24-32); one or more traffic shapers 124-126 coupled to the mapping unit to regulate the rate at which traffic moves in of the queues (col. 7 lines 52-67 and col. 8 lines 1-25); and a scheduler 136 coupled to the traffic shapers to regulate the order in which packets in the queues will

be transmitted from the queues to a next destination through the switch fabric (col. 8 lines 45-52).

Chen fails teach for regulating the rates at which traffic moves out of the queues with a traffic shaping algorithm.

However, Lodha discloses a packet-based traffic shaping system comprising a plurality of traffic shapers 106 for regulating the rates at which packets are output from a plurality of queues 104 (fig. 1 col. 4 lines 31-35).

Thus, it would have been obvious to a person of ordinary skill in the art to employ such shapers as taught by Lodha into Chen's system to prevent the scheduler from dequeuing packets at a rate that would exceed the limits of the traffic flow.

Chen and Lodha together fail to teach for all packets in a queue belong to the same flow bundle.

However, Conner discloses a method and apparatus for retaining packet order in multiprocessor systems via placing all packets sharing a common flow in one queue (fig. 4 col. 7 lines 7-11).

Thus, it would have been obvious to a person of ordinary skill in the art to provide such technique for queuing of packets as taught by Conner into Chen and Lodha's system to eliminate the possibility of out of order packets, which may results in lost packets and a reduction in network throughput.

Regarding to claims 4, 15, 18, and 26, Chen discloses labeling each packet with information identifying an associated flow and flow bundle (col. 7 lines 41-43).

Regarding to claims 5 and 21, Chen discloses classifying each packet into one of a plurality of flow bundles based on the packet's destination, path through the switch fabric, and priority (col. 7 lines 29-37).

Regarding to claim 6, Chen discloses scheduling the packets in the queues for transmission using a Round Robin scheduling algorithm (col. 7 lines 46-49).

Regarding to claims 9 and 19, Chen discloses determining which traffic class each received network packet belongs based on protocols associated with the packet (col. 2 lines 3-8).

Regarding to claims 10, 13, and 22, Chen discloses forwarding the packets to a switch 80 coupled to the switch fabric for transmission to the next destination (fig. 3 col. 5 lines 49-51).

Regarding to claim 12, Chen discloses an access unit L1-2 coupled to the classification unit to receive packets from and transmit packets to the network (col. 7 lines 13-21).

3. Claims 3, 14, 20, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Chen-Lodha-Conner in view of Hooman et al (US Patent 7, 155,716 B2).

Regarding to claims 3, 14, 20, and 25, the combination of Chen-Lodha-Conner disclose all the limitations with respect to claims 1, 11, 16, and 23, except for the classification unit comprises a load balancing element to determine a path to be taken by each packet through a switch fabric based on load balancing. However, Hooman discloses a method and system for scheduling transmission of packets comprising a

classifier 314 that serve to provide load balancing (fig. 3 col. 3 lines 47-49). Thus, it would have been obvious to a person of ordinary skill in the art, at the time of the invention, to employ such classifier as taught by Hooman into Chen-Lodha-Conner's system to avoid overflow in the queues.

4. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Chen-Lodha-Conner in view of Duffield et al (US Patent 6,452,933 B1).

Regarding to claims 7 and 8, the combination of Chen-Lodha-Conner disclose all the limitations with respect to claim 1, except for scheduling the packets in the queues for transmission comprises scheduling the packets in the queues for transmission using a Longest Delay First algorithm (claim 7) or a Stepwise QoS Scheduler SQS (claim 8). However, Duffield discloses a method and apparatus for routing packets in a communication network comprising a scheduler 200 implementing the Longest Delay First algorithm and the Least Time to Overflow algorithm (fig. 2 col. 5 lines 4-25). Thus, it would have been obvious to a person of ordinary skill in the art to employ such scheduler as taught by Duffield in Chen-Lodha-Conner's system for delivery of packets having various properties and criteria requirements.

5. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen, Lodha, and Conner in view of Gun (US Patent 5,347,511).

Regarding to claim 31, Chen, Lodha, and Conner disclose all the limitations with respect to claim 1, except for determining a path comprises consider load balancing. However, Gun discloses a method of traffic management in which a load balancing is

considered in determining a data path (fig. 3 col. 6 lines 53-65). Thus, it would have been obvious to a person of ordinary skill in the art, at the time of the invention, to employ such load balancing as taught by Gun into Chen, Lodha, and Conner's system to optimize the utilization of the data path use for carrying network data.

6. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen, Lodha, and Conner in view of Magill et al (US Patent 6,343,066 B2).

Regarding to claim 32, Chen, Lodha, and Conner disclose all the limitations with respect to claim 1 including dequeuing packet in a queue. But, Chen, Lodha, and Conner fails to teach for transforming the dequeued packets into uniform sizes frames by aggregating small packets and segmenting large packets and applying conveyance headers that contain information to decode the frame back into the original packets. However, Magill discloses a data switching method in which dequeued IP packets can be segment into fixed-length size smaller packet and reassemble into original packet via attached packet's header (fig. 2 col. 5 lines 43-57). Thus, it would have been obvious to a person of ordinary skill in the art, at the time of the invention, to employ such segmentation/reassembly processing of packets as taught by Magill into Chen, Lodha, and Conner's system to provide timeslots for transmission of packets across the switch fabric.

Response to Arguments

7. Applicant's arguments filed August 12, 2008 have been fully considered but they are not persuasive. Regarding to applicant's argument on pages 9-10, Chen and Connor fail to teach for "classifying each packet into one of a plurality of flow bundles

based on the packet's destination and **path through the switch fabric**..." In response, the examiner would like to direct applicant's attention to the previously cited col. 7 lines 22-45 in Chen. Herein, Chen discloses "classifying each packet...flow bundles based on the packet's destination and **path through the switch fabric**..." is done via CAM look-up that returns both the switching fabric egress port SPort to the destination line card and the destination port on that line card. Thus, the path each packet traversed through the switch fabric is indicated by the egress SPort and the destination port of the line card connecting to the switch fabric 70. And since Chen indeed teaches of what is claimed by applicant, therefor the rejections are maintained.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Duc T. Duong whose telephone number is (571)272-3122. The examiner can normally be reached on M-F (8:00 AM-5:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wing Chan can be reached on 571-272-7493. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. T. D./
Examiner, Art Unit 2619

/Wing F. Chan/
Supervisory Patent Examiner, Art Unit 2419
12/5/08